

Date: Wednesday, 18/06/2008 1:27:25 PM  
 User: Julie Leacock

## Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : AFT BASE ASSY *Sph*  
 Job Number : 39931 *-1*  
 Estimate Number : 13043  
 P.O. Number :  
 This Issue : 18/06/2008 S.O. No. :  
 Prsht Rev. : NC Part Number : D3651041  
 First Issue : / / Type : SMALL MED FAE Drawing Number : D3651 REV.B  
 Previous Run : 36913 Drawing Revision : B  
 Material :  
 Due Date : 07/07/2008 Qty: *2* Um: Each  
 Written By :  
 Checked & Approved By : *JUL 08 6 13*  
 Comment : Est Rev:A New Issue *07-05-27* DD verified by: EC  
 Est Rev:B ECN 1113P *08-01-22* DD verified by: EC  
 Est Rev:C ecn1162 *08-04-22* DD verified by: EC

## Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 PACKAGING 1 PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1  
 Pick Packing Kit

FF

2.0 D3651043 Flange Weldment



Comment: Qty.: 1.0000 Each(s)/Unit Total: 2.0000 Each(s)  
 FLANGE ASSEMBLY *B 39935-1*

FF 08-07-29 ①

3.0 D36511 Gasket



Comment: Qty.: 1.0000 Each(s)/Unit Total: 2.0000 Each(s)  
 GASKET *B 39936*

FF 08-07-29 ①

4.0 D36519 Inside Doubler



Comment: Qty.: 1.0000 Each(s)/Unit Total: 2.0000 Each(s)  
 DOUBLER *B 39937*

FF 08-07-29 ①

5.0 D365111 Gasket



Comment: Qty.: 1.0000 Each(s)/Unit Total: 2.0000 Each(s)  
 GASKET *B 39938*

FF 08-07-29 ①





## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: AFT BASE ASS'Y

Job Number: 39931

Part Number: D3651041

Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

D365113

Outside Doubler



Comment: Qty.: 1.0000 Each(s)/Unit Total: 2.0000 Each(s)

DOUBLER

B 39 39

FF 08-07-29 ①

7.0

CR3523402

RIVET



Comment: Qty.: 58.0000 Each(s)/Unit Total: 116.0000 Each(s)

RIVET

see Pto

See 08/29

8.0

SMALL FAB 1

SMALL & MEDIUM FAB RESOURCE 1



Pto →

Comment: 1-Assemble as per dwg D3651

2- Seal all mating surfaces and gaps using Proseal 700 fire wall sealant as per dwg D3651

Batch: M106294

3-install D3651-1 using 3M high performance contact adhesive 1357 as per dwg D3651

Batch: M105623

FF 08-07-29 ①

9.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

See 08/29 ①

10.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify with Dart part # using a fine point permanent marker and Stock

Location: 39926-1

FF 08-07-30 ①

11.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

See 08/08

MF 08-08-05

Job Completion





# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D3651-041 PAR #: N/A Fault Category: Prod / Prod Ass. met & small NCR: Yes No DQA: D Date: 28/05/08  
D3648-041  
D265-765-041 QA: N/C Closed: D Date: 28/06/08

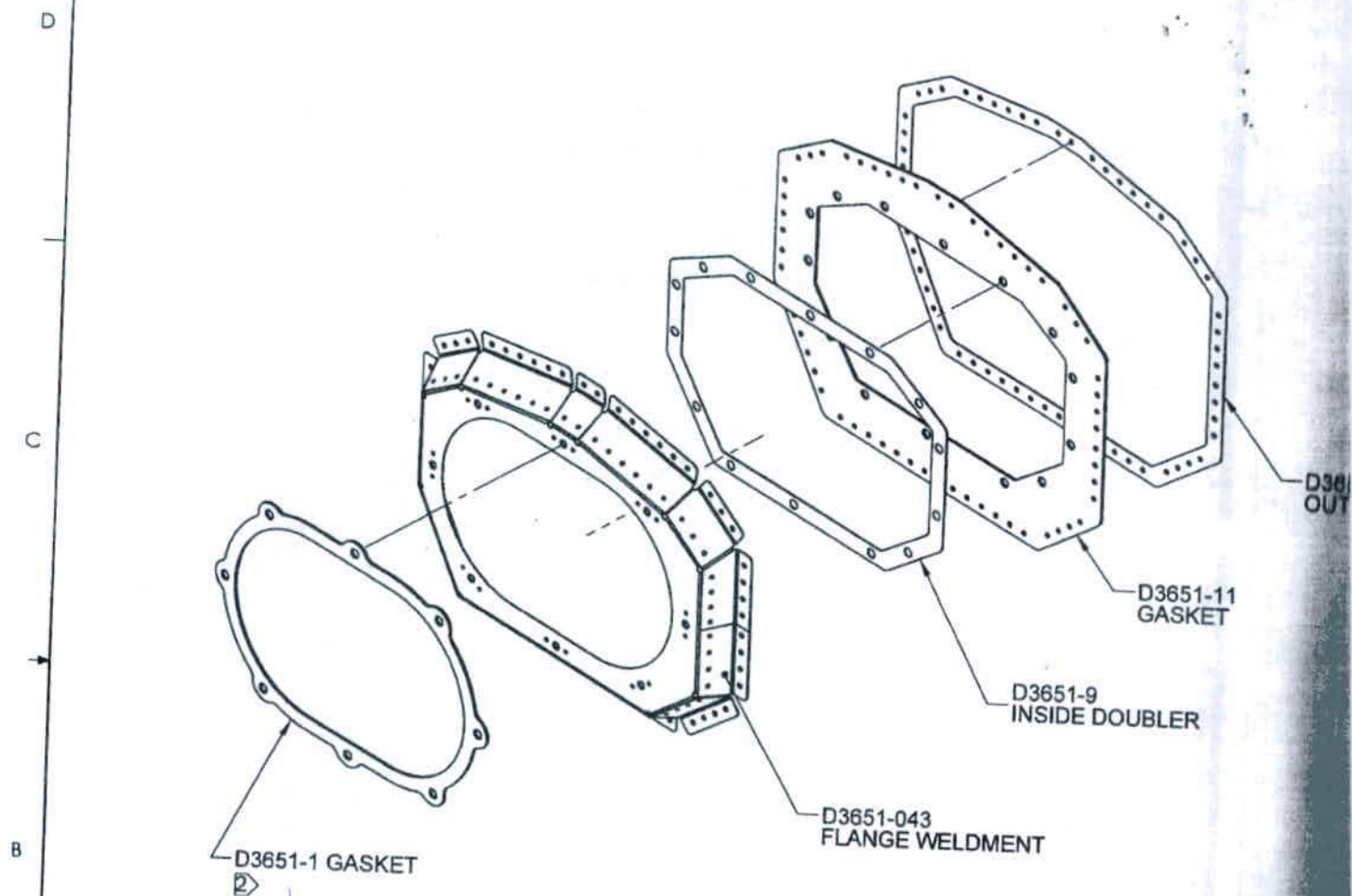
NCR: 39931		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
08/07/21	70	During assembly it was noticed that the full assembly was <del>more</del> assembled incorrectly. The D3651-11 / D3651-13	[Signature]	Parts are acceptable as per David Shepherd's E-mail attached to the Back. (Between Marc B. AND DAVID July 23 <sup>rd</sup> , 2008)	[Signature] 08/07/23 8/7/20	S	[Signature]	08/07/23
		was installed with CR3532-4-01 Rivets not CR3532-4-02 and the Proseal 700 was not put in place.		install Proseal <sup>700 in gaps</sup> B# M106294		S 8/7/20		
		R.L. employee assembled on w/o 39935 & and followed the D3651-043				S 8/7/20		
		Doing not the -041. was also missed during inspection						08/07/23

NOTE: Date & initial all entries

$$\begin{aligned}
 \frac{1}{2} \left( \frac{1}{2} \right) &= \frac{1}{4} \\
 \frac{1}{2} \left( \frac{1}{2} \right) &= \frac{1}{4} \\
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 \frac{1}{2} \left( \frac{1}{2} \right) &= \frac{1}{4}
 \end{aligned}$$

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 \frac{1}{2} \left( \frac{1}{2} \right) &= \frac{1}{4} \\
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 \frac{1}{2} \left( \frac{1}{2} \right) &= \frac{1}{4} \\
 \frac{1}{2} \left( \frac{1}{2} \right) &= \frac{1}{4}
 \end{aligned}$$





**D3651-041 AFT BASE**

**D3651-041 NOTES:**

- 1) SEAL ALL MATING SURFACES AND GAPS USING PROSEAL 700 FIRE WALL SEALANT
- 2) INSTALL D3651-1 USING 3M HIGH PERFORMANCE CONTACT ADHESIVE 1357
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE





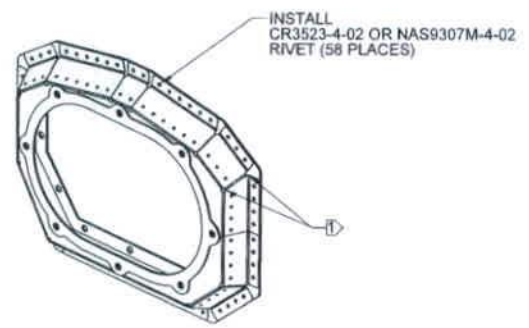
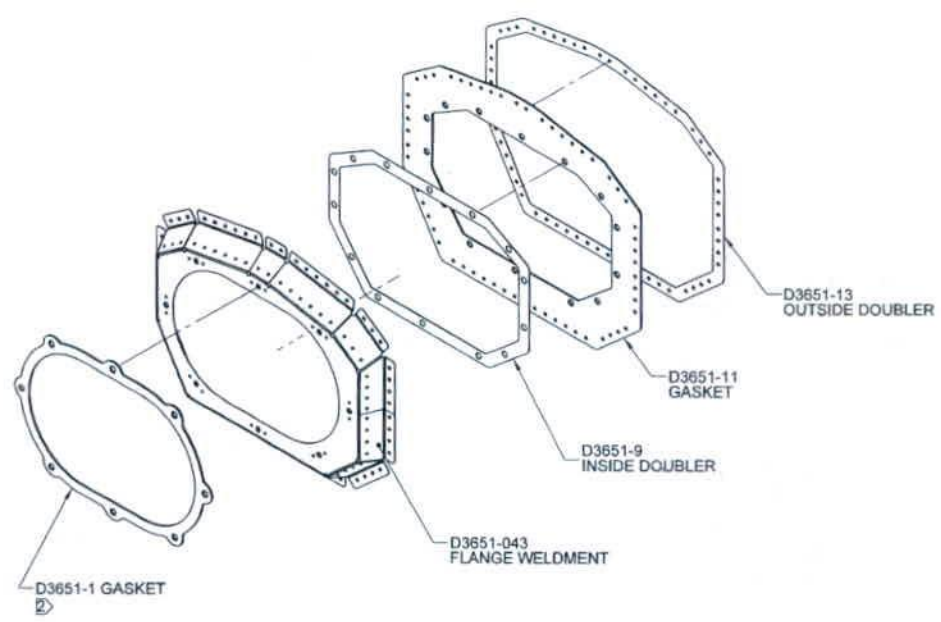
8 7 6 5 4 3 2 1

D

C

B

A



**PART LIST**

QTY -041	PART NUMBER	DESCRIPTION
X	D3651-041	AFT BASE ASSEMBLY
1	D3651-043	FLANGE WELDMENT
1	D3651-1	GASKET
1	D3651-9	INSIDE DOUBLER
1	D3651-11	GASKET
1	D3651-13	OUTSIDE DOUBLER
58	CR3523-4-02 or NAS9307M-4-02	RIVET

**D3651-041 AFT BASE ASSEMBLY**

**D3651-041 NOTES:**

- 1) SEAL ALL MATING SURFACES AND GAPS USING PROSEAL 700 FIRE WALL SEALANT
- 2) INSTALL D3651-1 USING 3M HIGH PERFORMANCE CONTACT ADHESIVE 1357
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 1.6 lbs

RECEIVED  
08.03.27.07

B	SHEET 1 GENERAL UPDATE SHEET 2: 8.74 WAS 8.50, 0.88 WAS 0.98, REMOVED ANGLE SHEETS 4, 5, 8 & 9: GENERAL DIMENSIONAL UPDATE SHEET 7: 5.514 WAS 5.504	RF	08.01.07
A	NEW ISSUE	RF	07.11.07
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	RF	DRAWING NO.	REV. B
MFG. APPR.	RF	D3651	SHEET 1 OF 9
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	AFT BASE ASSEMBLY	1:1
DATE	08.01.07	<small>COPYRIGHT © 2007 BY DART AEROSPACE LTD  THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL. IT IS TO BE SUPPLIED TO THE EXCLUSIVE USE OF THE CUSTOMER AND IS NOT TO BE USED FOR ANY PURPOSE OR DISSEMINATED TO ANY OTHER PERSON OR ENTITY WITHOUT THE WRITTEN PERMISSION OF DART AEROSPACE LTD.</small>	

8 7 6 5 4 3 2 1

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

TRANSFER DRILL  $\varnothing 0.129$  (#30 DRILL)  
FROM D3651-5/-7 TO D3651-3  
INSTALL CR3523-4-02 OR NAS9307M-4-02  
RIVETS (57)

MS21060-3K NUTPLATE (1)  
MS20427M3-3 RIVET (2)  
(8 PLACES)

G  
GTAW  
GRIND FLAT TO  
CLEAR FASTENERS  
(2 PLACES)

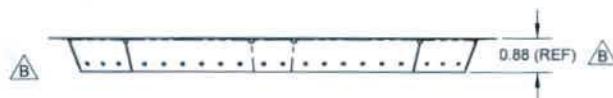
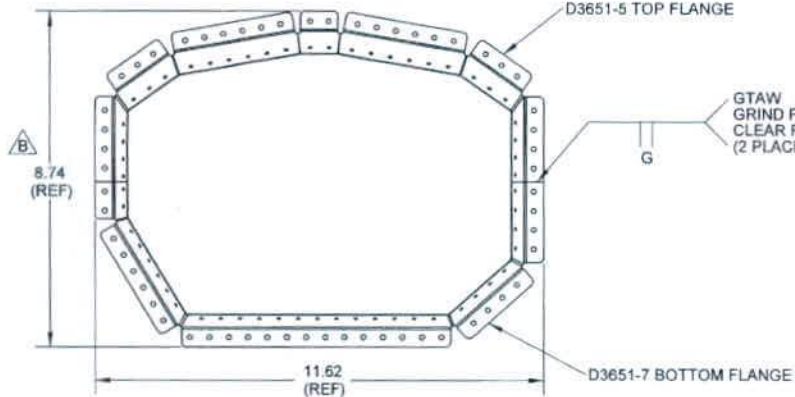
D3651-5 TOP FLANGE

D3651-7 BOTTOM FLANGE

D3651-5  
TOP FLANGE  
(REF)

D3651-7  
BOTTOM FLANGE  
(REF)

D3651-3  
BASE



# **D3651-043 FLANGE WELDMENT**

QTY -043	PART NUMBER	DESCRIPTION
X	D3651-043	FLANGE WELDMENT
1	D3651-3	BASE
1	D3651-5	TOP FLANGE
1	D3651-7	BOTTOM FLANGE
16	MS20427M3-3	RIVET
8	MS21060-3K	NUTPLATE
57	CR3523-4-02 or NAS9307M-4-02	RIVET

## **D3651-043 NOTES:**

- 1) WELD PER QSI 004
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.78 lbs

DESIGN	RF	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	LE	DRAWING NO.	REV. B
MFG. APPR.	AK	D3651	SHEET 2 OF 9
APPROVED	AK	TITLE	SCALE
DE APPR.	AK	AFT BASE ASSEMBLY	1:3
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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

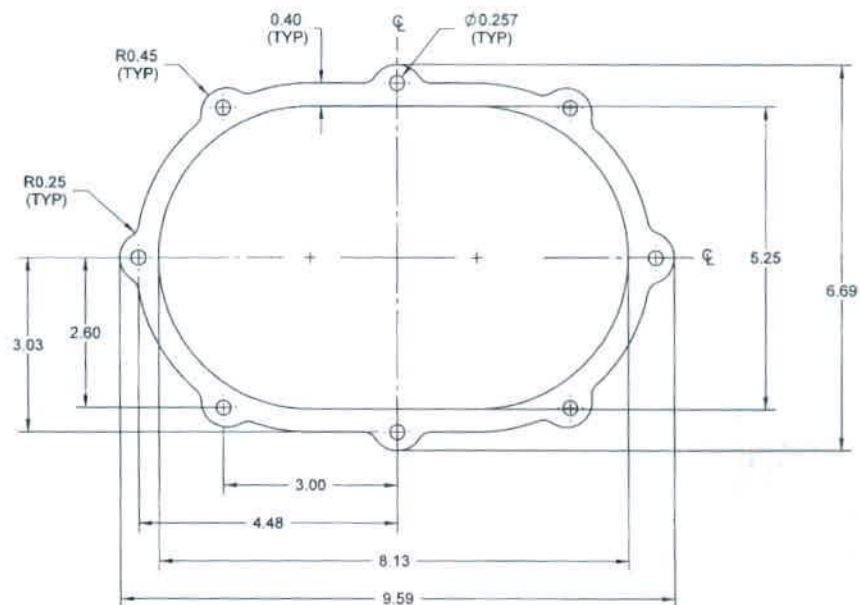
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QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries





**D3651-1 GASKET**

**NOTES:**

- 1) MATERIAL: THERMO-CHEM P/N G-89, (REF. 0.060 THICK)  
POSSIBLE SUPPLIER: A.R. THOMSON GROUP
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) PART IS SYMMETRIC ABOUT  $\phi$
- 8) WEIGHT: 0.09 lbs

DESIGN	RF	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
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CHECKED	<i>[Signature]</i>	DRAWING NO. <b>D3651</b>	REV. B
MFG. APPR.	<i>[Signature]</i>	TITLE <b>AFT BASE ASSEMBLY</b>	SHEET 3 OF 9
APPROVED	<i>[Signature]</i>	SCALE <b>1:2</b>	
DE APPR.		COPYRIGHT © 2007 BY DART AEROSPACE LTD	
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

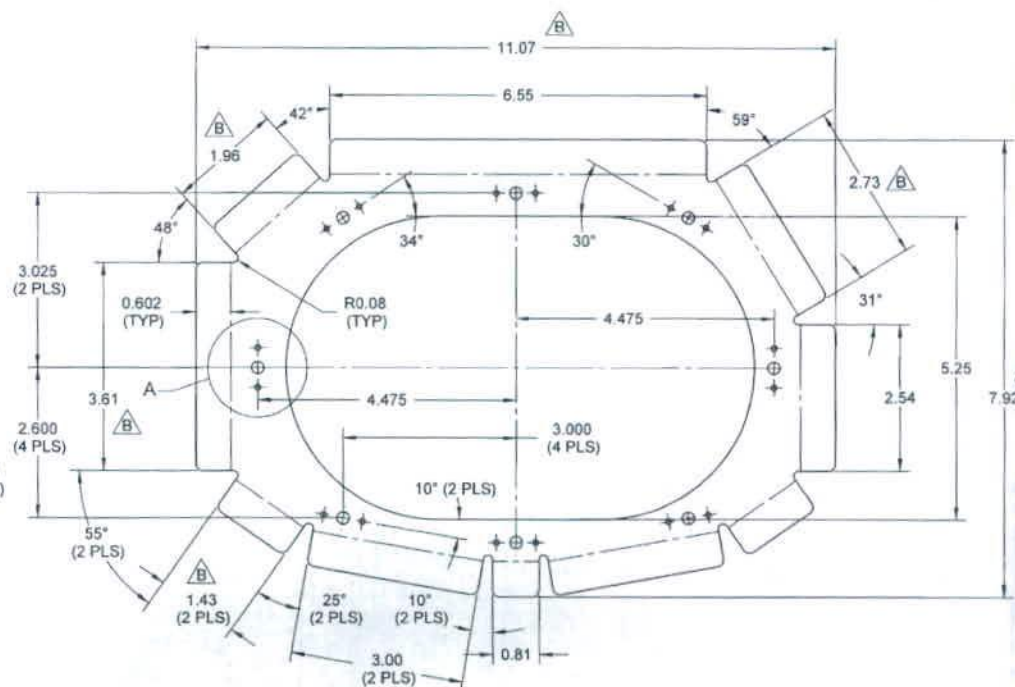
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

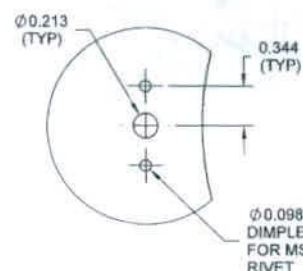


NOTES:

1) MATERIAL: AISI 30316 STAINLESS STEEL 0.018 (26 GAUGE) SHEET, PER MIL-S-5019  
(REF. DART SPEC. M304S26GA)  
2) FINISH: NONE  
3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED  
4) UNITS: INCHES UNLESS OTHERWISE NOTED  
5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX  
6) IDENTIFICATION: NONE  
7) WEIGHT: 0.27 lbs  
8) BEND TO 55° WHERE INDICATED



**D3651-3F FLAT PATTERN**

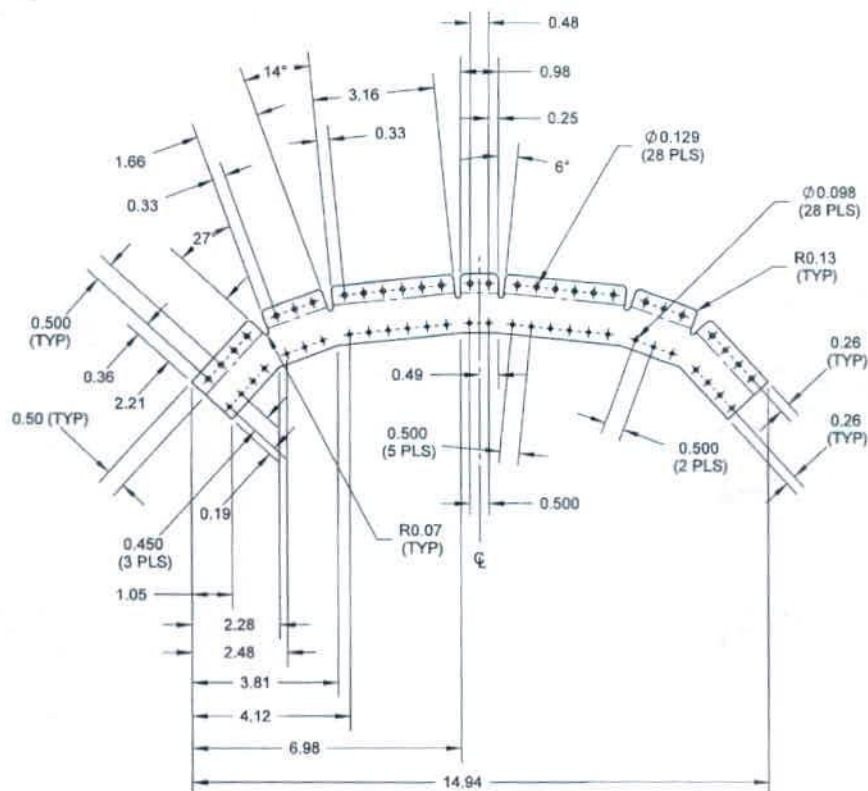


**DETAIL A**

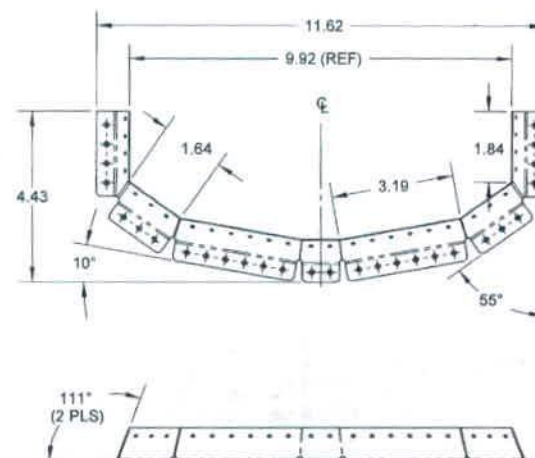
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DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	LE	DRAWING NO.	REV. B
MFG. APPR.	AA	D3651	SHEET 4 OF 9
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	AFT BASE ASSEMBLY	
DATE	08.01.07	1:2	







**D3651-5F FLAT PATTERN**



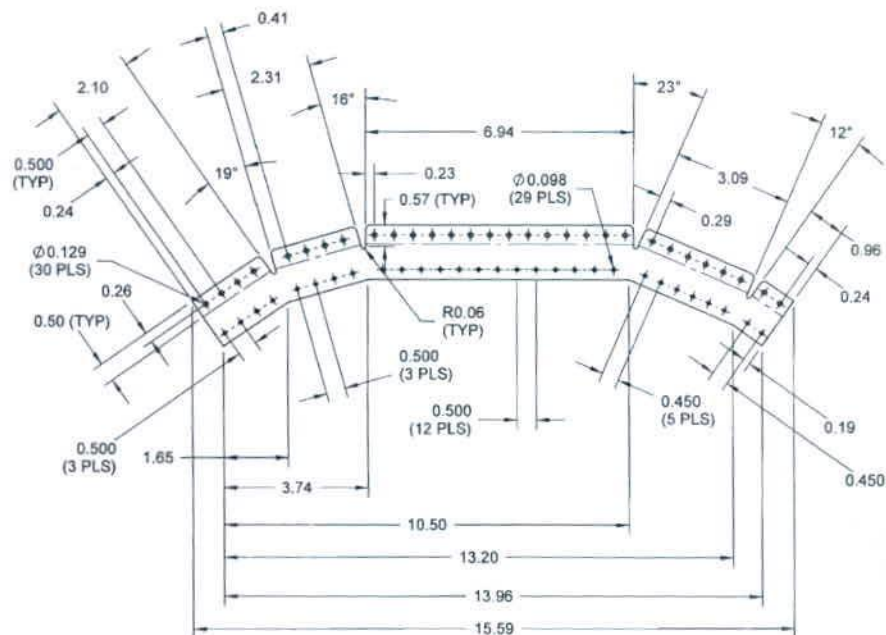
**D3651-5 TOP FLANGE BEND DETAIL**  
(MAKE FROM D3651-5F FLAT PATTERN)

**NOTES:**

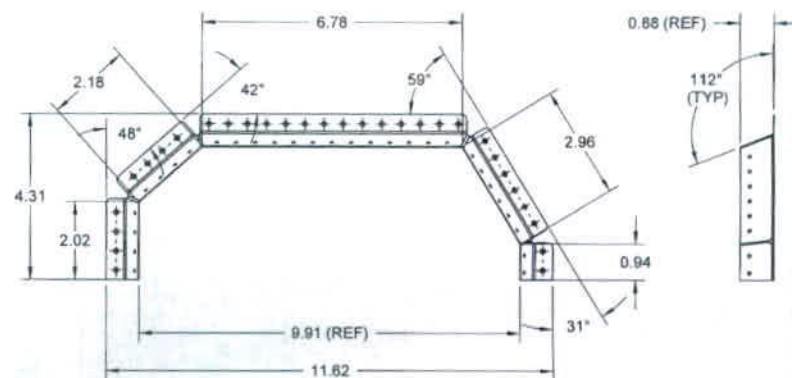
- 1) MATERIAL: AISI 304/316 STAINLESS STEEL 0.018 (26 GAUGE) SHEET, PER MIL-S-5019 (REF. DART SPEC. M304S26GA)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.02 lbs

DESIGN	RF	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	LE	DRAWING NO.	REV. B
MFG. APPR.	MP	D3651	SHEET 5 OF 9
APPROVED	MP	TITLE	SCALE
DE APPR.	MP	<b>AFT BASE ASSEMBLY</b>	
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**D3651-7F FLAT PATTERN**



**D3651-7 BOTTOM FLANGE BEND DETAIL**  
(MAKE FROM D3651-7F FLAT PATTERN)

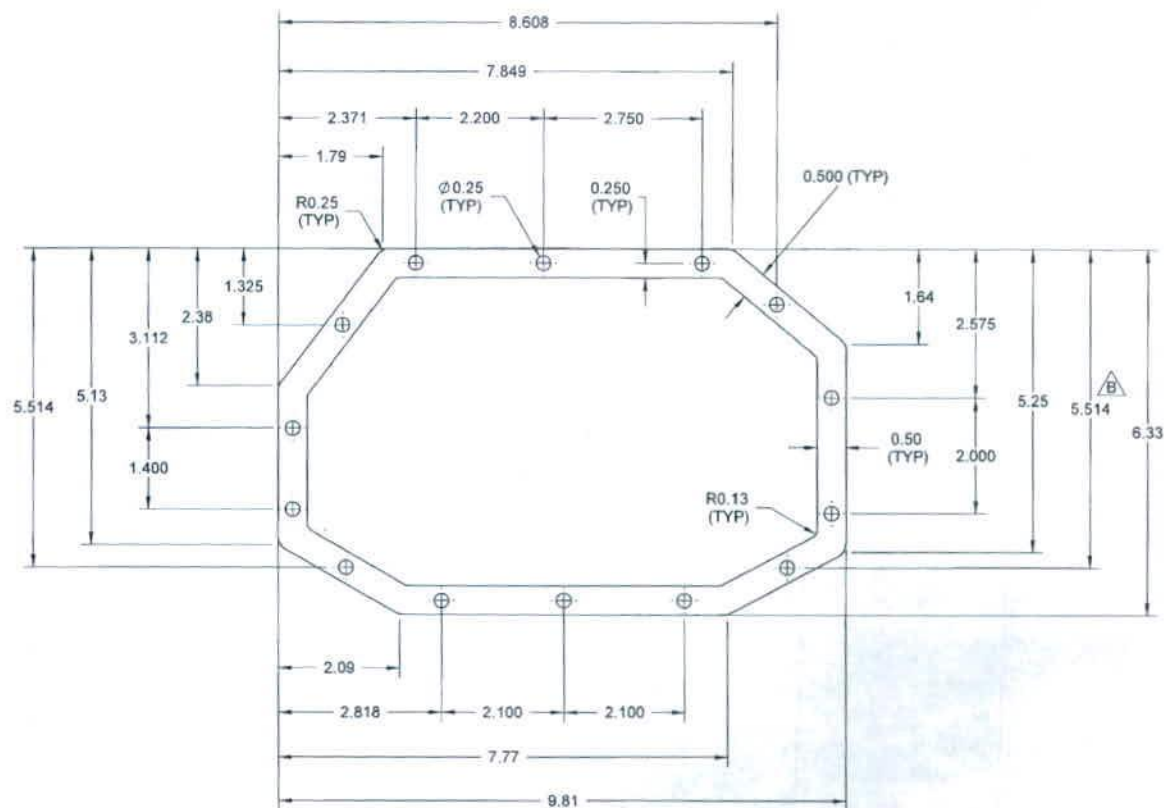
**NOTES:**

- 1) MATERIAL: AISI 304/316 STAINLESS STEEL 0.018 (26 GAUGE) SHEET, PER MIL-S-5019 (REF. DART SPEC. M304S26GA)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.02 lbs

DESIGN	RF	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	KE	DRAWING NO.	REV. B
MFG. APPR.	KE	<b>D3651</b>	SHEET 6 OF 9
APPROVED	KE	TITLE	SCALE
DE APPR.	KE	<b>AFT BASE ASSEMBLY</b>	1:3
DATE	08.01.07	COPYRIGHT © 2007 BY DART AEROSPACE LTD	







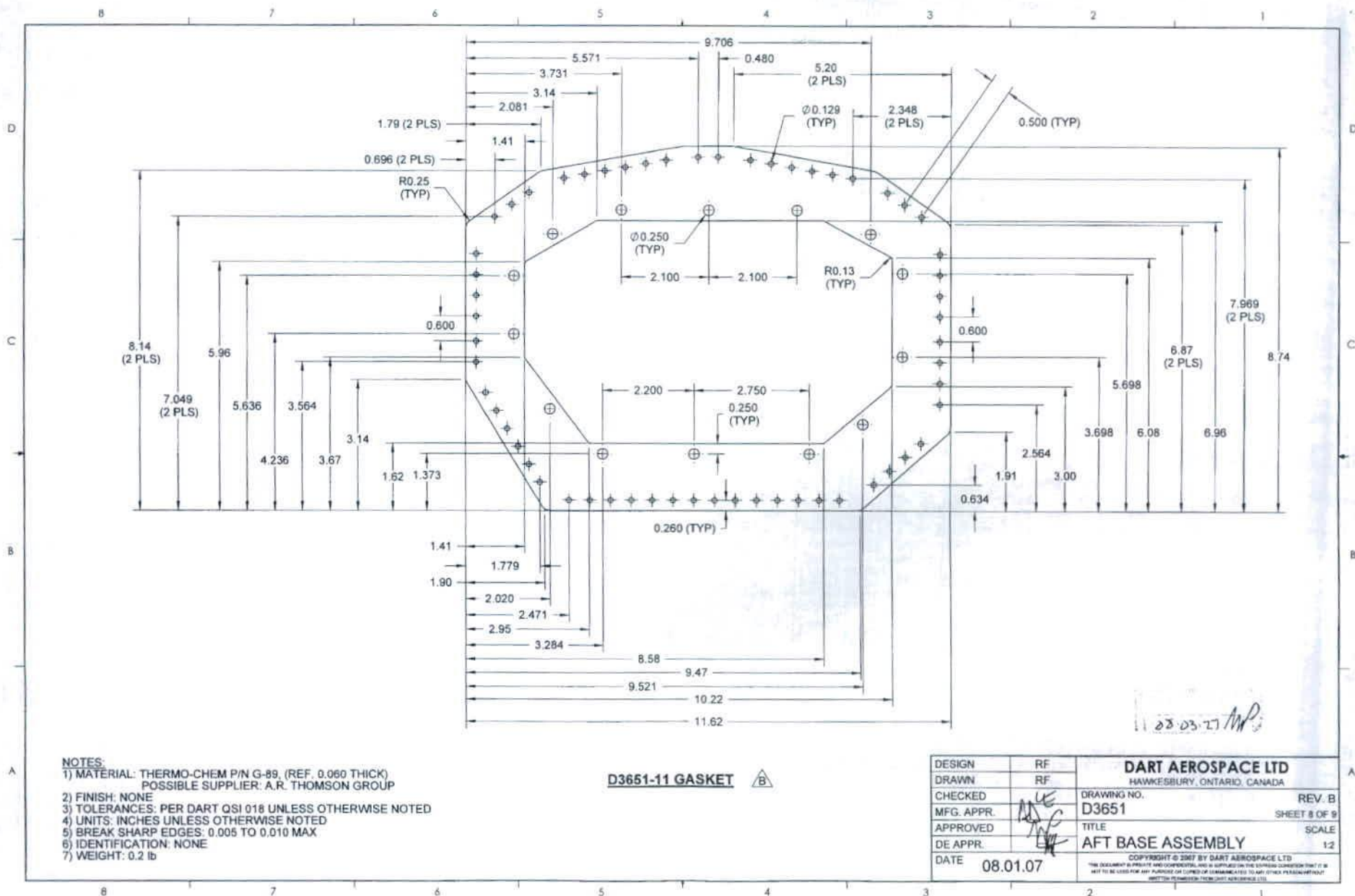
**D3651-9 INSIDE DOUBLER**

**NOTES:**

- 1) MATERIAL: AISI 304/316 STAINLESS STEEL 0.018 (26 GAUGE) SHEET, PER MIL-S-5019 (REF. DART SPEC. M304S26GA)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.07 lbs

DESIGN	RF	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	WLE	DRAWING NO.	REV. B
MFG. APPR.	WLE	D3651	SHEET 7 OF 9
APPROVED	WLE	TITLE	SCALE
DE APPR.	WLE	AFT BASE ASSEMBLY	1:2
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**Marc Bellavance**

---

**From:** David Shepherd [dshepherd@dartaero.com]  
**Sent:** July 23, 2008 2:56 AM  
**To:** 'Marc Bellavance'  
**Cc:** 'Roberto Fuentes'  
**Subject:** RE: Non-conforming D3651-041

Marc,

With respect to the rivets, the length change is insignificant. If the rivets pulled up properly, then you can sign this off as a deviation. If the -01 are better than -02, we should change the drawing. This is surprising since we've already made these before ...

With respect to the sealing issue, the intent is that we seal mating surfaces when there is metal to metal contact. Where there is a gasket between two pieces of metal, then I don't think we need sealant. Any air gaps in the assembly should be plugged with sealant after rivetting

Sorry for the slow response. I hope this makes sense.

David

---

**From:** Roberto Fuentes [mailto:rfuentes@dartaero.com]  
**Sent:** Monday, July 21, 2008 11:48 AM  
**To:** David Shepherd  
**Subject:** FW: Non-conforming D3651-041  
**Importance:** High

---

**From:** Marc Bellavance [mailto:mbellavance@dartaero.com]  
**Sent:** Monday, July 21, 2008 11:24 AM  
**To:** 'Roberto Fuentes (E-mail)'  
**Subject:** Non-conforming D3651-041  
**Importance:** High

Hi Roberto (a.k.a. David)... or is it David (a.k.a. Roberto)...

Anyways, here are the details about the non-conforming D3651-041:

- 1) Drawing says to seal all mating surfaces and gaps using Proseal 700 Fire Wall Sealant: that did not happen and all parts are riveted;
- 2) Drawing says to use CR3523-4-02 Rivets to fasten D3653-043/-11/-13: the rivets used were CR3532-4-01 Rivets;
- 3) If Items 1 and 2 above are acceptable deviations, is GA required to apply a bead of Proseal 700 all around the inside perimeter of the assembly (where D3651-043 and D3651-11) to ensure all gaps are sealed?
- 4) Quantity of non-conforming parts: 1.

Please let me know if this is acceptable or not.

Thanks!

Regards,

23/07/2008





• **Marc Bellavance**  
**Mechanical Designer/Technical Support**

• ***DART*** *aerospace Ltd.*

Tel: 613-632-5200 Ext. 240

Fax: 613-632-9311

E-mail: [mbellavance@dartaero.com](mailto:mbellavance@dartaero.com)

Web: [www.dartaero.com](http://www.dartaero.com)

No virus found in this incoming message.

Checked by AVG.

Version: 7.5.524 / Virus Database: 270.5.3/1564 - Release Date: 7/21/2008 6:42 AM

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Version: 7.5.524 / Virus Database: 270.5.4/1566 - Release Date: 7/22/2008 6:00 AM

